

ECLIPSE MAPPING OF PULSATING STARS

Douglas Gies
Georgia State University
GO40012

The exquisite accuracy and temporal coverage provided by Kepler has led to the discovery of hundreds of pulsating stars in the Kepler Field of View. Many of these are members of eclipsing binary systems in which a companion star crosses in front of the pulsator each orbit. We have discovered many such pulsators among eclipsing binaries with primary stars more massive than the Sun, and these probably belong to the delta Scuti and gamma Doradus classes of pulsating stars. Many of these are nonradial pulsators in which the flux variations are organized in spatial sectors across the visible hemisphere of the star. Here we propose to use the method of eclipse mapping to determine the degree and azimuthal order of the dominant pulsation mode in four eclipsing binaries. The detailed eclipse changes in the flux recorded by Kepler are closely related to the flux distribution across the occulted portion of the pulsating star, and we will use the new short cadence data to extract the details of the spatial flux variations caused by nonradial pulsations.